

an external ICS user frame having a specific ICS user address system ADX is inputted to the access control apparatus on the sending side from the user communication line through the ICS logic terminal;

the ICS user frame is converted into an internal ICS network frame having an ICS network address system ADS, when it is found that the information for identifying the ICS logic terminal to which the ICS user frame is inputted as well as the sender ICS user address and the receiver ICS user address included in the ICS user frame are registered in a record of the conversion table in the access control apparatus;

the ICS network frame includes a network control field;

the network control field stores at least the ICS network address for specifying the ICS network communication line; and

31 the ICS user frame is reconstituted from the ICS network frame, is transferred on another user communication line through the ICS logic terminal of the access control apparatus on the receiving side, and arrives at another external information communication equipment, when the destination of the ICS network frame is determined by the conversion table in the access control apparatus and by the relay table in the relay apparatus according to a rule of the ICS network address system ADS, and the ICS network frame is transmitted through the ICS network communication line and has arrived at the access control apparatus on the receiving side.

34. An integrated information communication system according to Claim 33, wherein the conversion table includes a priority, the ICS network frame includes a priority obtained from the conversion table, and the ICS network frame is sent by the relay apparatus according to the priority of the ICS network frame.

35. An integrated information communication system according to Claim 33, wherein the conversion table has two or more records, set of the ICS network address for specifying the ICS network communication line, for each of the records, differs from the set of the same ICS logic terminal identification information, the sender ICS user address and the receiver ICS user address,

and a destination which the ICS user frame arrives at is varied by changing the receiver ICS user address.

36. An integrated information communication system according to Claim 33, wherein intra-corporation communication and inter-corporation communication are executed depending upon whether the sender ICS user address and the receiver ICS user address registered in the conversion table are both addresses for intra-corporation communication or addresses for inter-corporation communication.

37. An integrated information communication system in which:

31 an ICS network communication line for transferring an ICS network frame is determined, when an ICS network address for identifying an ICS logic terminal is imparted to an ICS logic terminal at an end of a user communication line and when an identification information of the ICS logic terminal to which the ICS user frame is inputted is determined;

an ICS network address for specifying the ICS network communication line is registered as a record of a conversion table of an access control apparatus, and a request of identification is registered in the record as a virtual dedicated line;

an external ICS user frame having a specific ICS user address system ADX is inputted to the access control apparatus from the user communication line through the ICS logic terminal;

the ICS user frame is converted into an internal ICS network frame having an ICS network address system ADS, when it is found that the request of identification is registered, as a virtual dedicated line, in the record of the conversion table that includes the ICS logic terminal identification information;

the ICS network frame includes a network control field;

the network control field stores at least the ICS network address for specifying the ICS network communication line; and

the ICS user frame is reconstituted from the ICS network frame, transferred to another user communication line through the ICS logic terminal of the access control apparatus on the receiving

side and arrives at another external information communication equipment, when the destination of the ICS network frame is determined by the conversion table in the access control apparatus and by the relay table in the relay apparatus according to a rule of the ICS network address system ADS, and the ICS network frame is transmitted through the ICS network communication line and has arrived at the access control apparatus on the receiving side.

38. An integrated information communication system according to Claim 33, wherein the record of the conversion table includes a request of identification indicating intra-corporation communication/inter-corporation communication, processing related to the record is not executed when the request of identification is registered, as a virtual dedicated line, in the record of the conversion table that includes the ICS logic terminal to which the ICS user frame is inputted, and the ICS user frame is converted into the ICS network frame when it is found that the request of identification is the intra-corporation communication/inter-corporation communication.

39. An integrated information communication system in which:

an ICS network communication line for transferring the ICS network frame is determined when there is determined set of an identification information of ICS logic terminal, a sender ICS user address (inter-corporation) and a receiver ICS user address (inter-corporation);

the ICS network address for specifying the ICS network communication line is registered in a record of a conversion table of an access control apparatus;

the sender ICS user address (intra-corporation) is registered in the record of the conversion table corresponding to the sender ICS user address (inter-corporation) and a conversion table includes a request of identification meaning the inter-corporation communication;

the sender ICS user address in the ICS user frame is changed to the sender ICS user address (inter-corporation) to be registered at the record of the conversion table and then the ICS user frame is converted into an internal ICS network frame having an ICS network address system ADS, when it is found that set of information for identifying the ICS logic terminal inputted by the

ICS user frame, the sender ICS user address and the receiver ICS user address in the ICS user frame is registered at a record of the conversion table as the information for identifying the ICS logic terminal, the sender ICS user address (intra-corporation) and the receiver ICS user address (inter-corporation);

the ICS network frame includes a network control field;

the network control field stores at least the ICS network address for specifying the ICS network communication line; and

the ICS user frame is reconstituted from the ICS network frame, is transferred to another user communication line through the ICS logic terminal of the access control apparatus on the receiving side, and arrives at another external information communication equipment, when the destination of the ICS network frame is determined by the conversion table in the access control apparatus and by the relay table in the relay apparatus according to a rule of the ICS network address system ADS, and the ICS network frame is transmitted through the ICS network communication line and has arrived at the access control apparatus on the receiving side.

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40. An integrated information communication system according to Claim 33, further having an ICS network server which comprises a processor and an ICS network data base, wherein a result held therein is to be returned back for a request from the access control apparatus, or when no answer held for the question from the access control apparatus, a communication is made with other ICS network server by using an ICS network server communication function to obtain an answer and the result is sent back to the access control apparatus issued the question.

41. An integrated information communication system according to Claim 40, further including an address administration server having a correspondence table in which the processor is corresponded to a relationship between the ICS network address and the ICS user addresses.

42. An integrated information communication system according to Claim 40, further having an ICS name server including the processor and an ICS name conversion table with the function which

receives a presentation of an ICS name from the access control apparatus, obtains an ICS user address therefor from the ICS name conversion table, and informs the access control apparatus of the obtained result, and the address administration server writing at least the ICS user address and the ICS network address onto the conversion table, and returning the ICS user address corresponding to the ICS name to the user.

31 43. An integrated information communication system according to Claim 42, further having an ICS name server including the processor and an ICS name conversion table with the function which receives a presentation of an ICS name from the access control apparatus, obtains an ICS user address therefor from the ICS name conversion table, and informs the access control apparatus of the obtained result, and the address administration server writing at least the ICS user address and the ICS network address onto a temporary conversion table, and returning the ICS user address corresponding to the ICS name to the user.

44. An integrated information communication system according to claim 42, further including the processor and an ICS name conversion table, and having the function which receives a presentation of an ICS name from the access control apparatus, obtains an ICS user address therefor from the ICS name conversion table, informs the access control apparatus of the obtained result, and returns the ICS user address corresponding to the ICS name to the user.

45. An integrated information communication system according to Claim 35, having a function in which, upon receipt of an ICS user frame, the access control apparatus reads the kind of an accounting system for each ICS frame held in the conversion table based on an ICS user address included in the ICS user frame, generates an accounting information when the kind that is read out is a value representing a quantity-proportional accounting system, informs an accounting server of the accounting information as an accounting information frame, and, when the content that is read out is a value representing a flat rate system, does not form the accounting information and does not inform the accounting server of the accounting information as an accounting information frame.

46. An integrated information communication system according to Claim 35, wherein at least an access control apparatus is placed on the outside and a superior access control apparatus management server is placed on the inside, in order to execute the intra-corporation communication or the inter-corporation communication.

47. An integrated information communication system according to Claim 35, wherein the access control apparatus has an encryption means and a decryption means, the ICS user frame is converted into a cipher text through the encryption means and is transmitted inside the ICS when the ICS is being encapsulated and, when the ICS is decapsulated, the ICS user frame that is converted into the cipher text is returned back to the initial ICS user frame through the decryption means.

31 48. An integrated information communication system according to Claim 35, wherein the access control apparatus is functionally divided into an aggregated access control apparatus and a simple access control apparatus, the user is connected to the simple access control apparatus, the conversion table is divided into an aggregated conversion table in the aggregated access control apparatus and a simple conversion table in the simple access control apparatus, the ICS encapsulation and the ICS decapsulation are executed by the simple access control apparatus, and the accounting and an electronic signature are executed by the aggregated access control apparatus.

49. An integrated information communication system according to Claim 35, further having user service servers, ICS authority servers and conversion table servers each in plural numbers, wherein a request of ICS subscription is received by the user service servers, the ICS authority servers assign the ICS user addresses, ICS network addresses and ICS names, and the conversion table servers rewrite the conversion table in the access control apparatus.

50. An integrated information communication system according to Claim 35, wherein an ICS operator gives an instruction to the superior user service server, to the superior resource

administration server and to the superior passage information server to operate them upon being informed of data separately.

51. An integrated information communication system according to Claim 35, wherein a telephone line conversion unit in the access control apparatus is connected to a telephone through a telephone line to execute the communication by voice using the telephone.

52. An integrated information communication system according to Claim 35, wherein a person who has received ICS buries an encryption function and data related to the encryption in the roaming terminal, and the encryption function is selected by changing parameters.

31 53. An integrated information communication system according to Claim 35, wherein an ICS user address and an ICS network address of an opponent with whom the communication is to be made are obtained by using the telephone number as an ICS domain name, and the ICS network address is held in the conversion table in the access control apparatus on a calling side.

54. An integrated information communication system according to Claim 53, wherein an ICS user address and an ICS network address of an opponent with whom the communication is to be made are obtained by using the telephone number as the ICS domain name, and the digitized voice is included on the ICS user frame.

55. An integrated information communication system in which:

an ICS network communication line for transferring an ICS network frame is exclusively determined between an access control apparatus on a sending side and an access control apparatus on a receiving side, when an ICS network address for identifying an ICS logic terminal is imparted

to an ICS logic terminal at an end of a user communication line and when set of an ICS logic terminal identification information on a sending side and a receiver ICS user address is determined;

the ICS network address for determining a destination of the ICS network frame for specifying the ICS network communication line is specified by a conversion table in the access control apparatus and by a relay table in a relay apparatus;

an external ICS user frame having a specific ICS user address system ADX is inputted to the access control apparatus on the sending side from the user communication line through the ICS logic terminal;

the ICS user frame is converted into an internal ICS network frame having an ICS network address system ADS, when it is found that the information for identifying the ICS logic terminal to which the ICS user frame is inputted as well as the receiver ICS user address in the ICS user frame are registered in a record of the conversion table in the access control apparatus;

the ICS network frame includes a network control field;

the network control field stores at least the ICS network address for specifying the ICS network communication line;

the ICS user frame is reconstituted from the ICS network frame, is transferred on another user communication line through the ICS logic terminal of the access control apparatus on the receiving side, and arrives at another external information communication equipment, when the destination of the ICS network frame is determined by the conversion table in the access control apparatus and by the relay table in the relay apparatus according to a rule of the ICS network address system ADS, and the ICS network frame is transmitted through the ICS network communication line and has arrived at the access control apparatus on the receiving side;

an ICS network communication line is set in the conversion table of the access control apparatus and in the relay table in the relay unit to which the each user communication line is connected for transmitting and receiving the ICS user frames between a user 1 having a value of the ICS user address and another user 2 having another value of the ICS user address;

an ICS network communication line is set in the conversion table of the access control apparatus and in the relay table in the relay apparatus to which the each user communication line is

connected for transmitting and receiving the ICS user frames between another user m and the user 1 or 2;

an ICS network communication line is set in the conversion table of the access control apparatus and in the relay table in the relay apparatus to which the each user communication line is connected for transmitting and receiving the ICS user frames between another user n and the user 1, 2 or m; and

a closed network is defined and included in the ICS to transmit and receive the ICS user frame among the users 1, 2, m and n as a set of all ICS network communication lines.

56. An integrated information communication system in which:

a receiving ICS network address is exclusively determined and is registered as a record of the conversion table, when an ICS network address for identifying an ICS logic terminal is imparted to an ICS logic terminal at an end of a user communication line and when set of an ICS logic terminal identification information and a receiver ICS user address is determined;

the ICS user frame is converted into the ICS network frame when it is found that the ICS logic terminal identification information inputted by the ICS user frame and the receiver ICS user address included in the ICS user frame are registered at the record in the conversion table of the access control apparatus;

an external ICS user frame having a specific ICS user address system ADX is converted into an internal ICS network frame being administrated by the conversion table after being inputted to the access control apparatus on the sending side from the user communication line through the ICS logic terminal;

the ICS network frame is transmitted through the inside according to a rule of the ICS network address system ADS;

the ICS user frame is reconstituted from the ICS network frame, transferred on another user communication line through the ICS logic terminal of the access control apparatus on the receiving side and arrives at another external information communication equipment, when the ICS network frame is arrived at the access control apparatus on the receiving side;

a record for transmitting and receiving the ICS user frame is set to the conversion tables in the access control apparatus to which the user communication line of a user 1 is connected and in another access control apparatus to which the user communication line of a user 2 is connected between the user 1 having a value of the ICS user address and another user 2 having another value of ICS user address;

a record is set to the conversion table in the access control apparatus to which the user communication lines are connected between another user m and the user 1 or 2, permitting the user m to transmit and receive the ICS user frame to and from the user 1 or 2;

a record for transmitting and receiving the ICS user frame is set to the conversion table in the access control apparatus to which the user communication lines are connected between another user n and the user 1, 2 or m; and

a closed network for transmitting and receiving the ICS user frame is defined and included in the ICS among the users 1, 2, m and n only as a set of all records.

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57. An integrated information communication system in which a closed network X and another closed network Y are determined by the method of Claim 55, and the ICS user frame is not transmitted or received between a user x belonging to the closed network X and a user y belonging to the closed network Y, the closed networks being included in a number of 2 or more.

58. An access control apparatus in which:

an ICS network address for identifying an ICS logic terminal is imparted to the ICS logic terminal of an access control apparatus at an end of a user communication line;

a first rule is such that the identification information of the ICS logic terminal that is determined is registered as a record of a conversion table so as to exclusively determine the terminating ICS network address, and a request of identification is registered at the record as a virtual dedicated line;

a second rule is such that set of the identification information of the ICS logic terminal and the receiver ICS user address that is determined, is registered as the record of the conversion table

so as to exclusively determine the terminating ICS network address, and a request of identification is registered at the record as intra-corporation communication;

the conversion table has two or more records, and the destination which the ICS user frame arrives at is changed by changing the receiver ICS user address for the same ICS logic terminal identification information;

the ICS user frame is converted into an ICS network frame by using the terminating ICS network address obtained according to the first rule when the ICS user frame is inputted from the ICS logic terminal, the record of the conversion table inclusive of the ICS logic terminal identification information is found, and the request for identification is registered as a virtual dedicated line;

when the request for identification is registered as the intra-corporation communication, the second rule is such that the ICS user frame is converted into the ICS network frame when it is found that the identification information of the ICS logic terminal inputted by the ICS user frame and the receiver ICS user address in the ICS user frame are registered at the record of the conversion table;

then, when neither the procedure by the first rule nor the procedure by the second rule holds, or when it is not found that the set of the identification information of the ICS logic terminal to which the ICS user frame is inputted and the receiver ICS user address in the ICS user frame, has been registered as a record of the conversion table; it is judged whether the receiver ICS user address in the ICS user frame is a section of the inter-corporation communication address, and when it is the section of the inter-corporation communication address, the ICS user frame is directly used as the ICS network frame, while the receiving network address in the ICS network frame is the receiver ICS user address in the ICS user frame;

the ICS user frame is reconstituted from the ICS network frame when the ICS network frame is transmitted passing through at least one or more relay apparatuses and arrives at another access control apparatus; and

when the receiving network address in the ICS network frame is an inter-corporation communication address section, the ICS network frame is directly used as the ICS user frame, and the ICS user frame is transmitted to another external information communication equipment to carry out the virtual dedicated line, intra-corporation communication and inter-corporation communication.

59. An integrated information communication system in which:

an ICS network address for identifying an ICS logic terminal is imparted to the ICS logic terminal at an end of a user communication line, an ICS network address of an ICS network server is registered so as to be exclusively determined as a receiving ICS network address upon simply determining a receiver ICS user address on a record of the conversion table, and a request of identification meaning a special ICS number is registered onto the record; and

when an ICS user frame is inputted through the ICS logic terminal, the ICS network address imparted to the ICS logic terminal is held as an originating ICS network address, whereby it is detected whether the receiver ICS user address in the ICS user frame is in agreement with the receiver ICS user address in the record of the conversion table, and when they are in agreement, the ICS user frame is converted into an ICS network frame by using the originating ICS network address that is held and the receiving ICS network address registered in the record, the ICS network frame being transmitted through the internal ICS network communication line according to the rule of the ICS network address system ADS so as to arrive at the ICS network server.

60. An integrated information communication system in which:

two or more access control apparatuses and one or more relay apparatuses are included, an ICS network server is included, which are directly or indirectly connected together through an ICS network communication line, plural IP terminals of the external users of the integrated information communication system are connected to any one of the access control apparatus through the user communication lines, an ICS network address is imparted to the ICS logic terminal to identify the ICS logic terminal at an end of each of the user communication lines, and the ICS network addresses are imparted to identify the relay apparatus and the ICS network server;

the access control apparatus, the relay apparatus and the ICS network server are allowed to exchange the information upon transmitting and receiving the ICS network frame by using the ICS network address;

an external ICS user frame having an ICS user address system ADX is converted into the ICS network frame being administrated by the conversion table in the access control apparatus, the ICS network frame is constituted by a network control field and a network data field, the network control field includes at least an address that complies with the ICS network address system ADS, the ICS network frame is transmitted according to a rule of the ICS network address system through at least one or more relay apparatuses;

when set of an ICS logic terminal identification information and a receiver ICS user address is determined, an ICS network address stored in the network control field of the ICS network frame formed by the access control apparatus by conversion is registered as a record of the conversion table so as to be exclusively determined, and the ICS user frame is converted into the ICS network frame when it is found that the identification information of the ICS logic terminal inputted by the ICS user frame and the receiver ICS user address in the ICS user frame are registered in the record of the conversion table;

number of the records is two or more, set of the receiver ICS user address and the ICS network address stored in the network control field is different for each of the records for the same ICS logic terminal identification information, and the destination at which the ICS user frame arrives is changed by changing the receiver ICS user address in the ICS user frame inputted through the same ICS logic terminal; and

only an ICS user frame registered as a record of the conversion table is transferred to collect communication fees depending upon the transfer of the ICS user frame.

61. An integrated information communication system according to Claim 60, wherein:

when the ICS network address on a sending side is determined, the ICS network address stored in the network control field is registered as a record of the conversion table so as to be exclusively determined and the record is registered as a virtual dedicated line;

the ICS user frame is converted into the ICS network frame when it is found that the ICS user frame is registered as a virtual dedicated line in the record of the conversion table that includes an identification information of the ICS logic terminal to which the ICS user frame is inputted; and

in a state where the virtual dedicated line is not registered, the ICS user frame is converted into the ICS network frame when it is found that the identification information of the ICS logic terminal to which the ICS user frame is inputted and the receiver ICS user address in the ICS user frame are registered in the record of the conversion table.

62. An integrated information communication system in which an ICS network address of an internal ICS network frame is determined based on an ICS logic terminal on a sending side and the ICS user address imparted to a sender ICS user frame, and an ICS logic terminal on a receiving side to which a sender ICS network frame is to be transmitted is determined based on the thus determined ICS network address.

63. An integrated information communication system in which an ICS network address for identifying an ICS logic terminal is imparted to an ICS logic terminal at an end of a user communication line, and an ICS network communication line for transferring an ICS network frame is determined between a first access control apparatus on a sending side and a second access control apparatus on a receiving side when there is determined a set of an ICS logic terminal identification information of a sending side and a receiver ICS user address.

64. An integrated information communication system in which an external ICS user frame having a specific ICS user address system ADX is converted into an internal ICS network frame having an ICS network address system ADS being administrated by a conversion table in an access control apparatus; the ICS network frame includes a network control field and a network data field; the network control field stores an address that complies with the ICS network address system ADS; the network data field includes an ICS user frame which is transmitted according to a rule of the ICS network address system ADS through at least one or more relay apparatuses; the ICS user frame is reconstituted from the ICS network frame and is transferred to other external information communication equipment; a receiving ICS network address is registered as a record of the conversion table so as to be exclusively determined, when the ICS network address is imparted to the

ICS logic terminal at an end of a user communication line, and when there is determined a set of an ICS logic terminal identification information of a sending side and a receiver ICS user address; and the ICS user frame is converted into the ICS network frame when it is found that the identification information of the ICS logic terminal to which the ICS user frame is inputted and the receiver ICS user address in the ICS user frame are registered in the record of the conversion table.

65. An integrated information communication system according to any one of Claims 62, wherein a telephone communication is accomplished by transmitting and receiving an ICS user frame storing digitized voice between an external IP telephone and another IP telephone in the integrated information communication system.

B₁ 66. An integrated information communication system according to Claim 35, wherein a telephone communication is accomplished by transmitting and receiving an ICS user frame storing digitized voice between an external IP telephone and another IP telephone in the integrated information communication system.

67. An integrated information communication system according to Claim 35, wherein the conversion table server forms new items of the conversion table inclusive of ICS network addresses and ICS user addresses obtained by inquiring the domain name server based on the telephone numbers.

68. An integrated information communication method in which a closed network X is determined by a method of Claim 55, and the closed network X is identified from a value of the ICS network address by utilizing the property of the ICS network address stored in the network control field for determining the closed network as a set of the ICS network communication lines.

69. An integrated information communication method in which a closed network X is determined by a method of Claim 56, and the closed network X is identified from a value of the record by

utilizing the property for determining the closed network as a set of records of conversion table in the access control apparatus.

70. An integrated information communication system according to Claim 63, wherein a priority is registered in the conversion table in the access control apparatus on the sending side, the ICS network frame includes a priority obtained from the conversion table, and the ICS network frame is sent by the relay apparatus according to the priority.

71. An integrated information communication system according to Claim 35, wherein a speed class is imparted to the ICS network communication line, and the ICS network frame onto which the speed class is written is sent from the relay apparatus onto the ICS network communication line depending upon the speed class.

72. An access control apparatus which comprising:

a conversion table including a record in which a receiving ICS network address is registered so as to be exclusively determined when there is determined a set of an originating ICS network address, a sender ICS user address and a receiver ICS user address;

a sending side function of receiving an ICS user frame inputted to the ICS logic terminal and an ICS network address imparted to the ICS logic terminal to which the ICS user frame is inputted and converting the ICS user frame into an ICS network frame which is sent onto an ICS network communication line when it is found that the ICS network address, the sender ICS user address and the receiver ICS user address included in the ICS user frame are registered in the record of the conversion table; and

a receiving side function of reconstituting the ICS user frame from the ICS network frame and sending it from the ICS logic terminal on the receiving side onto the user communication line.

73. An access control apparatus which comprising:

a conversion table including a record in which a receiving ICS network address is registered so as to be exclusively determined when there is determined a set of an originating ICS network address and a receiver ICS user address;

a sending side function of receiving an ICS user frame inputted to the ICS logic terminal and an ICS network address imparted to the ICS logic terminal to which the ICS user frame is inputted and converting the ICS user frame into an ICS network frame which is sent onto an ICS network communication line when it is found that the ICS network address and the receiver ICS user address included in the ICS user frame are registered in the record of the conversion table; and

a receiving side function of reconstituting the ICS user frame from the ICS network frame and sending it from the ICS logic terminal on the receiving side onto the user communication line.

B1 74. An access control apparatus in which an ICS network address of an internal ICS network frame is determined based on an ICS logic terminal of a sending side and an ICS user address imparted to an external sending ICS user frame, and an ICS logic terminal on a receiving side to which a sending ICS network frame is to be transmitted is determined based on the thus determined ICS network address.

75. An access control apparatus in which an ICS network address for identifying an ICS logic terminal is imparted to an ICS logic terminal at an end of a user communication line, and an ICS network communication line for transferring an ICS network frame is determined between a first access control apparatus on a sending side and a second access control apparatus on a receiving side when there is determined a set of an ICS logic terminal identification information of the sending side and a receiver ICS user address.

76. An access control apparatus according to Claim 72, wherein the receiving side function is reconstituting the ICS user frame from the ICS network frame and sending it from the ICS logic terminal on the receiving side onto the user communication line only when it is found that the ICS

network address and the receiver ICS user address included in the ICS network frame are registered in the record of the conversion table, and of discarding the ICS network frame in other cases.

77. An access control apparatus according to any one of Claims 72, wherein a speed class is registered in the conversion table, and the speed class is written into the ICS network frame.

78. An access control apparatus according to any one of Claims 72, wherein a priority is registered in the conversion table, and the priority is written into the ICS network frame.

79. An access control apparatus according to any one of Claims 72, wherein a priority is registered in the conversion table, and the order of sending the ICS network frames onto the ICS network communication line is determined according to the priority.

80. An access control apparatus according to any one of Claims 72, wherein a priority is registered in the conversion table, and the order of sending the reconstituted ICS user frames onto the user communication line is controlled according to the priority.

81. An access control apparatus according to any one of Claims 72, further including an electronic signature unit, and having the function by which, for transmitting the data, an electronic signature is imparted to the ICS user frame according to the instruction of the signature at the time of transmission registered in the conversion table and for receiving the data, the electronic signature is imparted to the ICS user frame according to the instruction of the signature at the time of reception registered in the conversion table.

82. An access control apparatus according to any one of Claims 72, further having an encryption means and a decryption means, and having the function by which, for transmitting the data, the ICS user frame is encrypted according to an encryption class registered in the conversion table, then converted into an ICS network frame and is sent onto the ICS network communication line, and for

receiving the data, the ICS network frame is reconstituted, and the encrypted ICS user frame is decrypted to obtain the ICS user frame which is then sent from the ICS logic terminal on the receiving side onto the user communication line.

83. An access control apparatus according to any one of Claims 72, wherein an accounting class is registered in the conversion table.

84. An access control apparatus according to any one of Claims 72, further including a telephone line converting unit, and having a function which inputs an ICS user frame from a telephone line, changes to an ICS network frame and sends it to an ICS network communication line as a sending side function, and which sends an ICS user frame obtained by changing the ICS network frame inputted from the ICS network communication line to the telephone line as a receiving side function.

85. An access control apparatus according to any one of Claims 72, further including an ISDN line converting unit, and having a function which inputs an ICS user frame from an ISDN line, changes to an ICS network frame and sends it to an ICS network communication line as a sending side function, and which sends an ICS user frame obtained by changing the ICS network frame inputted from the ICS network communication line to the ISDN line as a receiving side function.

86. An access control apparatus according to any one of Claims 72, further including a CATV line converting unit, and having a function which inputs an ICS user frame from a CATV line, changes to an ICS network frame and sends it to an ICS network communication line as a sending side function, and which sends an ICS user frame obtained by changing the ICS network frame inputted from the ICS network communication line to the CATV line as a receiving side function.

87. An access control apparatus according to any one of Claims 72, further including a satellite line converting unit, and having a function which inputs an ICS user frame from a satellite line, changes to an ICS network frame and sends it to an ICS network communication line as a sending

side function, and which sends an ICS user frame obtained by changing the ICS network frame inputted from the ICS network communication line to the satellite line as a receiving side function.

88. An access control apparatus according to any one of Claims 72, further including a cellular phone line converting unit, and having a function which inputs an ICS user frame from a cellular phone line, changes to an ICS network frame and sends it to an ICS network communication line as a sending side function, and which sends an ICS user frame obtained by changing the ICS network frame inputted from the ICS network communication line to the cellular phone line as a receiving side function.

89. An access control apparatus having an ATM/ICS network frame converting unit for converting an ICS network frame into an ATM cell and for inversely converting the ATM cell into the ICS network frame, wherein an ICS user frame inputted from the user communication line having an IP transfer function is converted into an ICS network frame which is, then, converted into an ATM cell and is sent onto the ATM communication line, and the ATM cell inputted from the ATM communications line is converted into an ICS network frame which is, then, converted into an ICS user frame and is transferred onto the user communication line.

90. An ATM exchanger having a function for converting an ICS user frame into an ICS network frame and for inversely converting the ICS network frame into the ICS user frame, wherein an ICS user frame inputted from the user communication line having an IP transfer function is converted into an ICS network frame which is, then, converted into an ATM cell and is sent onto the ATM communication line, and the ATM cell inputted from the ATM communication line is converted into the ICS network frame which is, then, converted into the ICS user frame and is transferred onto the user communication line.

91. An IP telephone having at least an IP address accumulating unit, a voice input/output unit and a voice data transmitting/receiving unit, wherein an ICS user frame inclusive of a telephone

number of a destination telephone is formed and is sent onto the ICS user communication line, an ICS user frame storing the ICS user address of the destination telephone is received from the ICS user communication line, voice is inputted through the voice input/output unit and is converted into digital voice through the voice data transmitting/receiving unit, stored in the ICS user frame and is transmitted to the destination telephone and, then, the ICS user frame is transmitted and received to execute a telephone communication.

B₁ 92. An IP terminal having a function for forming, transmitting and receiving ICS domain name and ICS user address of an IP terminal, an ICS user address of a registered server, an encryption function and data related to encryption, and an ICS user frame, wherein the user of the IP terminal connects the IP terminal to a position of a home IP terminal, and the IP terminal forms an ICS user frame which includes at least the ICS domain name and ICS user address of the IP terminal, sends it onto the user communication line, and receives the ICS user frame that includes a report of registration.

93. An IP terminal according to Claim 92, wherein the IP terminal further has an ICS user address for a roaming terminal and an ICS user address of a connection server, inputs at least the ICS domain name of the remote person and a password specific to the IP terminal, by using the encryption function and the data related to encryption, forms an ICS user frame including the ICS domain name of the IP terminal and the ICS domain name of the remote person, sends the ICS user frame onto the user communication line, receives, from the user communication line, the ICS user frame including an ICS user address for the IP terminal corresponding to the ICS domain name of the IP terminal in a one-to-one manner and an ICS user address for the remote person corresponding to the ICS domain name of the IP terminal of the remote person in a one-to-one manner, and transmits and receives the ICS user frame by using the ICS user address for the IP terminal that is obtained and the ICS user address for the remote person.

94. An access control apparatus according to Claim 58, wherein a record according to the first rule is not included in the conversion table, and the intra-corporation communication and the inter-corporation communication are executed.

95. An integrated information communication system in which:

an ICS network address for identifying an ICS logic terminal is imparted to the ICS logic terminal of an access control apparatus at an end of a user communication line;

a first rule is such that an identification information of the ICS logic terminal that is determined is registered as a record of a conversion table so as to exclusively determine a receiving ICS network address, and a request of identification is registered at a record as a virtual dedicated line;

a second rule is such that a set of the identification information of the ICS logic terminal and the receiver ICS user address that is determined, is registered as a record of a conversion table so as to exclusively determine the receiving ICS network address, and a request of identification is registered at the record as intra-corporation communication;

the conversion table has two or more records, and the destination which the ICS user frame arrives at is changed by changing the receiver ICS user address for the same ICS logic terminal identification information;

the ICS user frame is converted into an ICS network frame by using the receiving ICS network address obtained according to the first rule when the ICS user frame is inputted from the ICS logic terminal, the record of the conversion table inclusive of the ICS logic terminal discrimination information is found, and the request for identification is registered as the virtual dedicated line;

when the request for identification is registered as the intra-corporation communication, the second rule is such that the ICS user frame is converted into the ICS network frame when it is found that the identification information of the ICS logic terminal inputted by the ICS user frame and the receiver ICS user address in the ICS user frame are registered at the record of the conversion table;

next, when neither the procedure by the first rule nor the procedure by the second rule holds, or when it is not found that the set of the identification information of the ICS logic terminal inputted by the ICS user frame and the receiver ICS user address in the ICS user frame are registered as a record of the conversion table;

it is judged whether the receiver ICS user address in the ICS user frame is a section of the inter-corporation communication address, and when it is the section of the inter-corporation communication address, the ICS user frame is directly used as the ICS network frame, while the receiving network address in the ICS network frame is the receiver ICS user address in the ICS user frame;

the ICS user frame is reconstituted from the ICS network frame when the ICS network frame is transmitted passing through at least one or more relay apparatuses and arrives at another access control apparatus; and

when the receiving network address in the ICS network frame is an inter-corporation communication address section, the ICS network frame is directly used as the ICS user frame, and the ICS user frame is transmitted to other external information communication equipment to carry out the virtual dedicated line, intra-corporation communication and inter-corporation communication.

96. An integrated information communication system according to Claim 95, wherein a record according to the first rule is not included in the conversion table, and the intra-corporation communication and the inter-corporation communication are executed.

97. An integrated information communication system in which:

an ICS network communication line for transferring an ICS network frame is exclusively determined between an access control apparatus on a sending side and an access control apparatus on a receiving side, when an ICS network address for identifying an ICS logic terminal is imparted to an ICS logic terminal at an end of a user communication line and when set of an ICS logic terminal identification information on an originating side and a receiver ICS user address is determined;

the ICS network address for determining a destination of the ICS network frame for specifying the ICS network communication line is specified by a conversion table in the access control apparatus and by a relay table in a relay apparatus;

an external ICS user frame having a specific ICS user address system ADX is inputted to the access control apparatus on the sending side from the user communication line through the ICS logic terminal;

the ICS user frame is converted into an internal ICS network frame having an ICS network address system ADS, when it is found that the information for identifying the ICS logic terminal to which the ICS user frame is inputted and the receiver ICS user address in the ICS user frame are registered in a record of the conversion table in the access control apparatus;

the ICS network frame includes a network control field;

the network control field stores at least the ICS network address for specifying the ICS network communication line; and

B₁ the ICS user frame is reconstituted from the ICS network frame, is transferred on another user communication line through the ICS logic terminal of the access control apparatus of the receiving side, and arrives at another external information communication equipment, when the destination of the ICS network frame is determined by the conversion table in the access control apparatus and by the relay table in the relay apparatus according to a rule of the ICS network address system ADS, and the ICS network frame is transmitted through the ICS network communication line and has arrived at the access control apparatus on the receiving side.

98. An integrated information communication system according to Claim 97, wherein the conversion table includes a priority, the ICS network frame includes a priority obtained from the conversion table, and the ICS network frame is sent by the relay apparatus according to the priority of the ICS network frame.

99. An integrated information communication system according to Claim 97, wherein the conversion table has two or more records, set of the ICS network address for specifying the ICS

network communication line, for each of the records, differs from the set of the ICS logic terminal identification information and the receiver ICS user address, and a destination which the ICS user frame arrives at is varied by changing the receiver ICS user address.

100. An integrated information communication system according to Claim 97, wherein intra-corporation communication and inter-corporation communication are executed depending upon whether the receiver ICS user address registered in the conversion table are address for intra-corporation communication or address for inter-corporation communication.

B₁ 101. An integrated information communication system according to Claim 33, wherein the record of the conversion table includes a request of identification indicating intra-corporation communication/inter-corporation communication, processing related to the record is not executed when the request of identification is registered, as a virtual dedicated line, in the record of the conversion table that includes the ICS logic terminal to which the ICS user frame is inputted, and the ICS user frame is converted into the ICS network frame when it is found that the request of identification is the intra-corporation communication/inter-corporation communication.

102. An integrated information communication system according to Claim 97, further having an ICS network server which comprises a processor and an ICS network data base, wherein when a result held therein is to be returned back for a request from the access control apparatus, or when no answer is returned back for the question from the access control apparatus, a communication is made with other ICS network server by using an ICS network server communication function to obtain an answer, and the result is sent back to the access control apparatus that has issued the question.

103. An integrated information communication system according to Claim 97, having a function in which, upon receipt of an ICS user frame, the access control apparatus reads the kind of an accounting system for each ICS frame held in the conversion table based on an ICS user address included in the ICS user frame, generates an accounting information when the kind that is read out

is a value representing a quantity-proportional accounting system, informs an accounting server of the accounting information as an accounting information frame, and, when the content that is read out is a value representing a flat rate system, does not form the accounting information and does not inform the accounting server of the accounting information as an accounting information frame.

104. An integrated information communication system according to Claim 97, wherein at least an access control apparatus is placed on the outside and a generalized access control apparatus management server is placed on the inside, in order to execute the intra-corporation communication or the inter-corporation communication.

B₁ 105. An integrated information communication system according to Claim 97, wherein the access control apparatus has an encryption means and a decryption means, the ICS user frame is converted into a cipher text through the encryption means and is transmitted inside the ICS when the ICS is being encapsulated and, when the ICS is decapsulated, the ICS user frame that is converted into the cipher text is returned back to the initial ICS user frame through the decryption means.

106. An integrated information communication system according to Claim 97, wherein the access control apparatus is functionally divided into an aggregated access control apparatus and a simple access control apparatus, the user is connected to the simple access control apparatus, the conversion table is divided into an aggregated conversion table in the aggregated access control apparatus and a simple conversion table in the simple access control apparatus, the ICS encapsulation and the ICS decapsulation are executed by the simple access control apparatus, and the accounting and an electronic signature are executed by the aggregated access control apparatus.

107. An integrated information communication system according to Claim 97, further having user service servers, ICS authority servers and conversion table servers each in plural numbers, wherein a request of ICS subscription is received by the user service servers, the ICS authority servers assign

the ICS user addresses, ICS network addresses and ICS names, and the conversion table servers rewrite the conversion table in the access control apparatus.

108. An integrated information communication system according to Claim 97, wherein an ICS operator gives an instruction to the generalized user service server, to the generalized resource administration server and to the generalized passage information server to operate them upon being informed of data separately.

109. An integrated information communication system according to Claim 97, wherein a telephone line conversion unit in the access control apparatus is connected to a telephone through a telephone line to execute the communication by voice using the telephone.

B₁ 110. An integrated information communication system according to Claim 97, wherein a person who has received ICS buries an encryption function and data related to the encryption in the roaming terminal, and the encryption function is selected by changing parameters.

111. An integrated information communication system according to Claim 97, wherein an ICS user address and an ICS network address of an opponent with whom the communication is to be made are obtained by using the telephone number as an ICS domain name, and the ICS network address is held in the conversion table in the access control apparatus on a calling side.

112. An integrated information communication system according to Claim 97, wherein a telephone communication is accomplished by transmitting and receiving an ICS user frame storing digitized voice between an external IP telephone and another IP telephone in the integrated information communication system.

113. An integrated information communication system according to Claim 63, wherein plural records of the conversion table in the access control apparatus on the sending side respectively

include the receiver ICS user address, any of the plural records is referred in accordance with a change of the receiver ICS user address imparted to the ICS user frame, and the ICS network communication line in which the ICS network frame is transferred is selected.

B₁ 114. An integrated information communication system in which an ICS network address of an internal ICS network frame is determined by using the conversion table in the access control apparatus based on an ICS logic terminal of a sending side and the ICS user address in the external ICS user frame, the ICS network address is converted into the ICS network frame by using the determined ICS network address, the ICS network frame is transferred inside and reaches at the access control apparatus on a receiving side, then the external ICS user frame is reconstituted, and an ICS logic terminal on the receiving side to which a sender ICS network frame is to be transmitted, determined by using at least ICS network address in the ICS network frame.

115. A method for discriminating closed network and LAN,
in an integrated information communication system wherein an ICS network address of an internal ICS network frame is determined by using a conversion table in an access control apparatus based on an ICS logic terminal information of a sending side and a receiver ICS user address in an external ICS user frame, the ICS network address is converted into the ICS network frame by using the determined ICS network address, the ICS network frame is transferred inside and reaches at the access control apparatus on a receiving side, then the external ICS user frame is reconstituted, and an ICS logic terminal on the receiving side to which a sender ICS network frame is to be transmitted by using at least ICS network address in the ICS network frame,

a closed network is discriminated as a region of a sender ICS user address by using a sender ICS user address in the external ICS user frame; and

LAN including an originating IP terminal for connecting to a user communication line to be connected to an ICS logic terminal on a sending side is discriminated.

116. A communication function circuit which comprising:

a conversion table unit including one or more records in which a receiving ICS network address is registered so as to be exclusively determined when there is determined a set of an originating ICS network address, a sender ICS user address and a receiver ICS user address;

a sending side function of receiving an ICS user frame inputted to the ICS logic terminal and an ICS network address imparted to the ICS logic terminal, and converting the ICS user frame into an ICS network frame when it is found that the ICS network address, the sender ICS user address and the receiver ICS user address included in the ICS user frame are registered in the record of the conversion table; and

a receiving side function of reconstituting the ICS user frame from the ICS network frame and sending it to the other logic terminal.

B₁
117. A communication function circuit which comprising:

a conversion table unit including one or more records in which a receiving ICS network address is registered so as to be exclusively determined when there is determined a set of an originating ICS network address and a receiver ICS user address;

a sending side function of receiving an ICS user frame inputted to the ICS logic terminal and an ICS network address imparted to the ICS logic terminal, and converting the ICS user frame into an ICS network frame when it is found that the ICS network address and the receiver ICS user address included in the ICS user frame are registered in the record of the conversion table; and

a receiving side function of reconstituting the ICS user frame from the ICS network frame and sending it to the other logic terminal.

118. A communication function circuit having a conversion table unit that includes one or more records in which a receiving ICS network address is registered so as to be exclusively determined when there is determined a receiver ICS user address, a function unit a sending side which receives an ICS user frame inputted through an ICS logic terminal and an ICS network address imparted to the ICS logic terminal, and converts the ICS user frame into the ICS network frame when it is found that the receiver ICS user address included in the ICS user frame is registered at the record of the